WHAT IS CLAIMED IS:

1. An optical scanning apparatus, comprising:

light source means;

an incident optical system for temporarily focusing a beam emitted from the light source means in a sub-scanning section to form a linear image on a deflection surface of a light deflector; and

a scanning optical system for guiding the beam deflected by the light deflector onto a surface to be scanned, wherein:

the beam from the incident optical system is incident at an angle with a normal to the deflection surface in the sub-scanning section;

the scanning optical system has a scanning optical element having a refractive power in the sub-scanning section; and

an optical axis of the scanning optical element is eccentric toward a deflection point side of the deflection surface with respect to a transmission position of a principle ray of the beam in a sub scanning direction to meet the following expression:

$$(\beta max - \beta min) < P/\Delta L$$

where βmax represents a maximum value of an imaging magnification in the sub-scanning section of an entire scanning region of the scanning optical system

and βmin represents a minimum value of the imaging magnification in the sub-scanning section of the entire scanning region of the scanning optical system; P represents a pixel size defined according to a resolution in the sub-scanning section; and ΔL represents a distance between the normal to the deflection surface at the deflection point and the optical axis of the scanning optical element in the sub scanning direction.

2. An optical scanning apparatus according to claim 1, wherein the imaging magnification in the sub-scanning section of the scanning optical system is set to ±10% or less in the entire scanning region.

3. An optical scanning apparatus according to claim 1, wherein the imaging magnification in the sub-scanning section of the scanning optical system is 0.7-fold or higher magnification in the entire scanning region and the scanning optical system includes a first scanning optical element having a refractive power in a main-scanning section and a second scanning optical element having a refractive power in the sub-scanning section, which weakens from an on-axis position to an off-axis position.

4. An optical scanning apparatus according to

claim 3, wherein in the sub-scanning section, the principle ray of the beam incident on the second scanning optical element enters the second scanning optical element at an angle with an optical axis thereof and the optical axis of the second scanning optical element extends in parallel to the normal to the deflection surface.

5. A color image forming apparatus comprising an image bearing member arranged on a surface to be scanned of the optical scanning apparatus according to any one of claims 1 to 4 and adapted to form an image.

6. A color image forming apparatus according to claim 5, further comprising a printer controller that converts color signals inputted from an external device into image data in different colors and inputs the image data to the optical scanning apparatus.

7. An optical scanning apparatus, comprising:

light source means for emitting a plurality of beams;

a plurality of incident optical systems for temporarily focusing the plurality of beams emitted from the light source means in a sub-scanning section to form a linear image on a deflection surface of a

common light deflector; and

a plurality of scanning optical systems for guiding the plurality of beams deflected by the common light deflector onto a different surfaces to be scanned, wherein:

the plurality of scanning optical systems have scanning optical elements each having a refractive power in the sub-scanning section;

the plurality of beams incident on the common light deflector are incident at an angle with a normal to the deflection surface in the sub-scanning section; and

each of an optical axis of the scanning optical elements of the plurality of scanning optical systems are eccentric toward a deflection point side of the deflection surface with respect to a transmission position of a principle ray of each of the plurality of beams in a sub scanning direction to meet the following expression:

$$(\beta max - \beta min) < P/\Delta L$$

where P represents a pixel size defined according to a resolution in the sub-scanning section; βmax represents a maximum value of a magnification in the sub-scanning section of an entire scanning region of the plurality of scanning optical systems and βmin represents a minimum value of the magnification in

the sub-scanning section of the entire scanning region of the plurality of scanning optical systems; and ΔL represents a distance between the normal to the deflection surface at the deflection point and the optical axis of the scanning optical element in the sub scanning direction.

8. An optical scanning apparatus according to claim 7, wherein the imaging magnification in the sub-scanning section of the plurality of scanning optical systems is set to ±10% or less in the entire scanning region.

9. An optical scanning apparatus according to claim 7, wherein the imaging magnification in the sub-scanning section of the plurality of scanning optical systems is 0.7-fold or higher magnification in the entire scanning region and the plurality of scanning optical systems each include a first scanning optical element having a refractive power in a main-scanning section and a second scanning optical element having a refractive power in the sub-scanning section, which weakens from an on-axis position to an off-axis position.

10. An optical scanning apparatus according to claim 9, wherein in the sub-scanning section, the

principle ray of the beam incident on the second scanning optical element enters the second scanning optical element at an angle with an optical axis thereof and the optical axis of the second scanning optical element extends in parallel to the normal to the deflection surface.

11. A color image forming apparatus comprising a plurality of image bearing members each arranged on a surface to be scanned of the optical scanning apparatus according to any one of claims 1 to 7 and adapted to form images in colors different from one another.

12. A color image forming apparatus according to claim 11, further comprising a printer controller that converts color signals inputted from an external device into image data in different colors and inputs the image data to each optical scanning apparatus.